

## Metallurgical and Materials Engineers



Metallurgical and Material Engineers enrich the understanding of raw materials used in manufacturing, and develop new ways to extract, use, and refine metals. This is achieved by conducting research on the properties of metals, non-metals and other alloys and materials such as ceramics and semiconductors. This work is essential to creating new applications for material in aerospace, machinery, and other technologies. The need for precious metals in the production of motor vehicle batteries represents an exciting frontier for Metallurgical and Materials Engineers in the automotive sector.

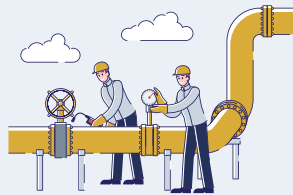
### Where do Metallurgical and Materials Engineers work?



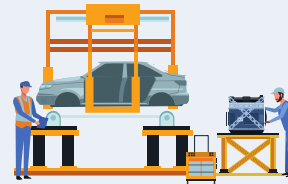
Architecture and Engineering Services



Aerospace Manufacturing Industry



Natural Gas Distribution



Vehicle Parts Manufacturing



Iron and Steel Mills and Ferro-alloy Manufacturing

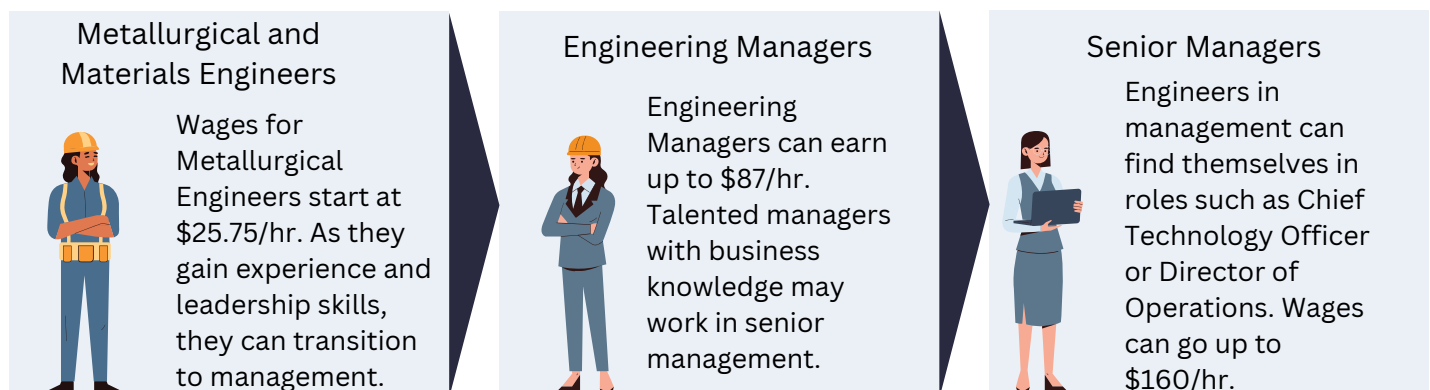
### What do Metallurgical and Materials Engineers do?

Metallurgical and Material Engineers understand materials and develop processes to refine, extract and make them usable in technologies. They regularly perform chemical and physical analysis, and work alongside other engineers to refine processes and develop metals and materials using the knowledge gained from their studies. Below are some tasks for this occupational group:

- Conduct studies and design, develop and specify the processes, and machinery to concentrate, extract, refine and process metals from ores
- Conduct chemical and physical analytical studies, failure analyses and other studies and recommend material selection, design of materials, corrosion control measures, operational testing and other procedures
- Supervise technologists, technicians, engineers and scientists.

### Career pathways & potential earnings of Metallurgical and Materials Engineers

Metallurgical and Materials Engineers can progress to other roles and positions:



Metallurgical and Materials Engineers can also apply their skills and expertise in other occupations such as the following:

- Aerospace Engineers
- Petroleum Engineers

## How do I become a Metallurgical and Materials Engineer?

There are several requirements to become a Metallurgical and Material Engineer. Some requirements may vary by province or company. Below are the most commonly required qualifications to work as a Metallurgical and Materials Engineer:

- **Minimum Education:** Completion of a bachelor's degree in metallurgic, materials, ceramics, chemical engineering or a related discipline is required. Some positions may require a master's or doctoral degree.
- **Certification, Licensing, and Training:** Becoming a professional engineer (P.Eng) requires graduating from an accredited educational program, three-to-four years of supervised work experience and the passing of an examination. A license is required to approve engineering drawings and reports.



## What are the most important skills to have as a Metallurgical Engineer?

The work Metallurgical and Metals Engineers perform influences the activities of those around them, such as health and safety or process engineers. As a result, the ability to effectively communicate the results of studies in written and oral form is an important asset.

### Technical Knowledge and Skills

- Computer Aided Design/Manufacturing (CADM) Software
- Systems Design and Modelling
- Numerical Computer Simulations
- Data Analysis
- Management of Personnel Resources
- Systems Evaluation

### Soft Skills

- Critical Thinking
- Complex Problem Solving
- Communication
- Judgement and Decision Making
- Inductive and Deductive Reasoning
- Supervision
- Written/Oral Expression

## Metallurgical Engineering jobs in Canada

Metallurgical and Materials Engineering is a niche field of engineering, with 2,700 employed across Canada's sectors and industries. Within the automotive sector, FOCAL projects 40 job openings in this field over the next decade. FOCAL also forecasts that 40 new workers will be required to fill the recruitment gap bought by talent shortages in the sector, which is important as the industry crosses over to the adoption of alternative energy and electrical vehicles.



Learn more about the job market for Metallurgical and Materials Engineers, as well as about many other developments and new technologies in Canada's automotive manufacturing by visiting our website [futureautolabourforce.ca](http://futureautolabourforce.ca).

You can also check our social media by following these links:

 [/focalinitiative](https://www.instagram.com/focalinitiative)

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